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UNIVERSITY AND EDUCATIONAL NEWS

At the September meeting of the Yale Corporation the treasurer reported further distribution of about \$685,000 from the estate of the late Justus S. Hotchkiss of New Haven. Other gifts include approximately \$10,000 additional for the Hepsa Ely Silliman Lectureship Fund, from the estate of the late Augustus E. Silliman; \$15,000 for the Charles W. Goodyear Memorial Scholarship Fund in the School of Forestry; and \$5,000 more from Mrs. Helen Newberry Joy and Messrs. John S. and Truman Newberry for the work of rebuilding and enlarging the Newberry organ in Woolsey Hall.

THE *Journal* of the American Medical Association announces that one of the final transactions of the merger of the medical school of the University of Pennsylvania, the Medico-Chirurgical College, and Jefferson Medical College was consummated, September 21, when the real estate holdings of the Medico-Chirurgical College were transferred to the trustees of the university. The college buildings, assessed at \$375,550, and two four-story houses, assessed at a total of \$54,000, were conveyed for a nominal consideration. These will eventually be conveyed to the city by the university and the buildings demolished, as they are in the line of the new parkway.

THE department of botany of the Massachusetts Agricultural College and Experiment Station has been reorganized with the following personnel: A. Vincent Osmun, professor and head of the department; George H. Chapman, research physiologist; P. J. Anderson, associate professor and associate pathologist; Orton L. Clark, assistant professor and assistant physiologist; F. A. McLaughlin, instructor; G. W. Martin, instructor.

TUFTS MEDICAL SCHOOL announces several changes in the faculty. Andrew H. Ryan, M.D. (Washington University), will take charge of the department of physiology.

Charles H. Baily, M.D. (Harvard), has been made associate professor of histology. R. Harmon Ashley, Ph.D. (Yale), will take charge of the department of chemistry in the dental and pre-medical school. Arthur L. Chute, M.D., has been advanced from assistant professor to associate professor of surgery, and Gilmore C. Dickey, D.M.D., from instructor to assistant professor of crown and bridge work.

NORTHWESTERN UNIVERSITY has appointed the following instructors: In the department of mathematics: Rutherford Erwin Gleason, B.A., Charles Edwin Wilder, Ph.D., Frank Edwin Wood, B.A., and Irwin Romans, M.A.; in the department of chemistry: Martin William Lisse, M.S. (University of Washington), and Wallace Jennings Murray, Sc.D. (Geneva, Switzerland), instructors in chemistry; Louis Wade Currier, B.S. (Mass. Tech.), instructor in mining and metallurgy. The following promotions have also been made: George Vest McCauley, Ph.D. (Wisconsin), becomes assistant professor of physics, and Chester Henry Yeaton, Ph.D. (Chicago), assistant professor of mathematics. Henry Andrews Babcock, Ph.D. (Northwestern), has been appointed an instructor in physics.

FREDERICK LYONS BROWN, of Northwestern University, has been appointed instructor in astronomy for the Dearborn Observatory.

DR. S. MORGULIS, of the department of physiological chemistry, college of physicians and surgeons, Columbia University, has been appointed professor of physiology in the Creighton University Medical College, Omaha, Nebraska.

UNDER the general direction of Mr. A. G. Perkin, who is a son of Sir W. H. Perkin and brother of Professor Perkin, of Oxford, a new staff has been appointed to the dyeing department of the University of Leeds. Some of the members will give special attention to the exclusive requirements of British Dyes (Limited), but most of them will devote their services to work which may best meet the needs of other firms. In addition to the scien-

tific investigation of anilines, the working out of processes, and the study of the constitution of color, particular regard is to be paid to coal tar distillation and the industrial application of cellulose. Another feature will be an experimental dyehouse. Mr. G. H. Frank, M.Sc., and Dr. Oesch, a Swiss expert, are retained on the staff, and with them will be associated Mr. P. E. King, Lieutenant A. E. Woodhead, M.Sc., Professor E. R. Watson, D.Sc., of Dacca College, and, as outside lecturers, Mr. H. P. Hird and Mr. C. F. Cross, both specialists engaged in allied industries.

DISCUSSION AND CORRESPONDENCE ATMOSPHERIC TRANSMISSION

TO THE EDITOR OF SCIENCE: On page 168 of your issue of August 4, 1916, Mr. Very is unfair to himself, to your readers, and to me. He points out that the Smithsonian Mount Wilson observations of September 20 and September 21, 1914, indicate greater transparency of the atmosphere for the complete, complex solar beam made up of energy of all wave-lengths the greater the air mass. From this he tries to lead your readers into the conclusion that the atmosphere gradually decreased in clearness during our period of observations. Nobody knows better than Mr. Very of Langley's mathematical proof that a complex beam traversing a medium the transmissive power of which varies with the wave-length must necessarily behave in this manner even though the medium is perfectly homogeneous. Pure water or glass would show the same effect. The transmission would continually increase for each successive layer traversed. This is because the less transmissible rays are continually becoming a smaller proportion of the intensity of the whole complex beam the farther it goes through the medium. If our pyrliometric observations *had not shown* the phenomenon which Mr. Very mentions they would have proved that the sky was growing clearer. The question then only remains whether the effect they do show is of the right magnitude or not. This is settled affirmatively by the results obtained with the spectro-bolometer.

For monochromatic rays the atmospheric transmission should be constant for all air masses, if the atmosphere neither grows clearer nor more opaque. Our spectro-bolometric work shows that this condition was closely fulfilled on the two days in question, as Mr. Very well knows. Having no comfort from the spectro-bolometric work, he omits mention of it, and tries to carry his point with the uninformed by paradoxing.

Mr. Very, however, draws attention to the increase of atmospheric humidity during the observations as indicated by Fowle's measurements. It may be remarked that between air-masses 11.0 and 7.2 on September 20 no appreciable change occurred. Yet that part of the observations gives the same result as the rest, showing that the effect of such small increase of humidity as occurred during the rest of the morning was negligible. Those who consult the original derivation of Fowle's method of estimating atmospheric humidity, are, however, aware that it rests on laboratory experiments extending only to 5 millimeters of precipitable water. For the exceptionally large air masses occurring on September 20 and 21 it was applied to the estimation of over 65 millimeters. It seems as likely that this extreme extrapolation involved inaccuracy, increasing with increasing air-mass rather than that the atmospheric humidity really increased from 3.3 to 4.0 millimeters during so short a time as the first 8 minutes after sunrise. I therefore incline to think that there was very little or no increase at all in atmospheric humidity on September 20 between air masses 19 and 3, although a small increase from 3.3 to 5.2 is indicated by Fowle's results. Later on there was really a small increase of humidity, but it appears to have been insufficient to produce appreciable error in the solar-constant values as calculated from small air masses.

As to the clearness of the sky at Flagstaff, Arizona, in August, 1912, Mr. Very shows that it was clearer there, at 7,000 feet elevation, than he is accustomed to find it near Boston, but he does not show that it was clear sky at Flagstaff. If it was really exceptionally